



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/834,964	04/13/2001	Dipak Shah	PETAP003	6295

22434 7590 09/20/2004  
BEYER WEAVER & THOMAS LLP  
P.O. BOX 778  
BERKELEY, CA 94704-0778

EXAMINER

GREY, CHRISTOPHER

ART UNIT PAPER NUMBER

2667

DATE MAILED: 09/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/834,964	<b>Applicant(s)</b> SHAH ET AL.	
	<b>Examiner</b> Christopher P Grey	<b>Art Unit</b> 2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 April 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                            | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "504" has been used to designate both Fig 5 and Fig 6a. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-25 and are rejected under 35 U.S.C. 102 (b) as being clearly anticipated by Hughes et al. (Patent No. 6747971)

Regarding claim 1, Hughes et al. shows a switching apparatus, comprising:

At least one multicast source queue for storing blocks of data, each block including at least a multicast payload, as disclosed in Col 3 line 66- Col 4 line 5 and the abstract.

At least one switch operatively connected to said multicast source queue, said at least one switch including at least a scheduler that schedules granting of multicast requests, as disclosed in Col 7 lines 15-21 and the abstract.

A plurality of destination queues operatively connected to said at least one switch, said destination queues receiving, via said at least one switch, at least the multicast payload for the multicast requests that have been granted by said scheduler, as disclosed in Fig 7, Col 15 lines 54- Col 16 line 13.

Wherein, when issued to the scheduler, each of the multicast requests operates to request switching the associated multicast payloads through said at least one switch to particular ones of said destination queues, and wherein each of the multicast requests

are issued in advance of sending the associated multicast payloads to said at least one switch, and only after a particular multicast request is at least partially granted does the associated multicast payload get transmitted from the associated multicast source queue to said at least one switch, is disclosed in Fig 6, Col 4 lines 24-30 and Col 15 lines 39- 58

Regarding claim 2, Hughes et al. shows a switching apparatus, wherein at least one switch simultaneously delivers the associated multicast payload to a plurality of destination queues, as disclosed in Fig 7 Col 15 line 54- Col 16 line13.

Regarding claim 3, Hughes et al. shows a switching apparatus, wherein when the particular multicast request is at least partially granted by scheduler, a grant is provided to the associated multicast source queue, as disclosed in Col 4 line 24- 30 and Col 15 lines 27-29.

Regarding claim 4, Hughes et al. shows a switching apparatus, wherein the grant indicates a set of said destination queues that are scheduled to simultaneously receive the associated multicast payload, as disclosed in Fig 7 Col 15 line 27- Col 16 line 13.

Regarding claim 5, Hughes et al. shows a switching apparatus, wherein the grant is temporarily stored at said at least one switch for subsequent use in configuring said at

least one switch to deliver the associated multicast payload to the set of said destination queues, as disclosed in Col 15 lines 27-30 and Col 15 line 39- Col 16 line 13.

Regarding claim 6, Hughes et al. shows a switching apparatus, wherein the associated multicast payload is sent to said at least one switch from the associated multicast source queue only once for each of the multicast requests that have been granted, yet is simultaneously delivered to a plurality of said destination queues, as disclosed in Col 15 lines 39- Col 16 line13.

Regarding claim 7, Hughes et al. shows a switching apparatus as recited in claim 1, wherein said multicast source queue is a virtual queue, and wherein said destination queues are virtual queues, as disclosed in Col 3 line 66- Col 4 line10 and Col 15 line 59- Col 16 line13, where the limitations for a normal queue are anticipated for a virtual queue.

Regarding claim 8, Hughes et al. shows a method (disclosed in the summary of the invention) for multicasting data held in a sending virtual queue through a switching apparatus to receiving virtual queues, with the method comprising:

Sending a multicast request from the sending virtual queue to the switching apparatus, the multicast request requesting to transfer a common payload of data to a plurality of the receiving virtual queues, as disclosed in Col 3 line 66- Col 4 line10 and

Col 15 line 59- Col 16 line13, where the limitations disclosed with a normal queue are anticipated for a virtual queue;

Subsequently sending the common payload of data from the sending queue to the switching apparatus after the sending queue receives notification that the multicast request has been at least partially granted, as disclosed in Col 4 line 24- 30 and Col 15 lines 27-29;

Configuring the switching apparatus for the multicast request; and thereafter concurrently transmitting the common payload of data through the configured switching apparatus to a plurality of the receiving virtual queues, as disclosed in Col 16 lines 1- 13.

Regarding claim 9, Hughes et al. shows when a grant is produced when the multicast request has been at least partially granted, as disclosed in Col 4 line 24- 30 and Col 15 lines 27-29, and;

Configuring of the switching apparatus is in accordance with the grant, as disclosed in elements 604, 606 and 606 in Fig 6 and Col 15 lines 39-58.

Regarding claim 10, Hughes et al. shows where sending operates to send the multicast request to the switching apparatus only once and to send the common payload of data from the sending queue to the switching apparatus only once, unless the multicast request is initially not completely granted, as disclosed in Col 3 line 66- Col 5 line 17 and Col 16 line 1- 13.

Regarding claim 11, Hughes et al. shows where the multicast request requests to transfer the common payload of data to N of the receiving virtual queues, where N is an integer, and wherein said sending operates to send the multicast request from the sending virtual queue to the switching apparatus substantially less than N times and to send the common payload of data from the sending virtual queue to the switching apparatus less than N times, as disclosed in Col15 line 39- Col 16 line 13.

Regarding claim 12, Hughes et al shows the common payload data is sent to the switching apparatus after the associated multicast request has been at least partially granted such that the switching apparatus need not store the common payload data while awaiting at least partial granting of the multicast request, as disclosed in Col 15 lines 39-53 and Col 4 lines 24-30.

Regarding claim 13, Hughes et al shows a method for multicasting data held in a sending virtual queue through a switching apparatus to receiving virtual queues, said method comprising:  
sending a multicast request to the switching apparatus, the multicast request requesting to transfer a common payload of data to a plurality of the receiving virtual queues, as disclosed in Col 3 line 66- Col 4 line10 and Col 15 lines 39-41;  
scheduling a grant of the multicast request to at least a certain plurality of the receiving virtual queues as disclosed in Col 4 lines 21- 30;



saving the grant at the switching apparatus;  
sending the grant from the switching apparatus to the sending virtual queue, as disclosed in Col 15 lines 27-38 ;  
sending the common payload of data from the sending virtual queue to the switching apparatus after the sending virtual queue receives the grant from the switching apparatus, as disclosed in element 604 and 606 in Fig6 and Col 15 lines 39-44;  
configuring the switching apparatus in accordance with the saved grant; and thereafter concurrently transmitting the common payload data from the switching apparatus to each of the certain plurality of the receiving virtual queues, as disclosed in element 607 in Fig 6 and Col 15 line 59- Col 16 line 18.

Regarding claim 14, Hughes et al shows duplication of the payload data occurs in the switching apparatus, as disclosed in Col 5 line 64- Col 6 line 3.

Regarding claim 15, Hughes et al shows configuring occurs when the switching apparatus receives the common payload data, as disclosed in Col 15 line 59- Col 16 line 13.

Regarding claim 16, Hughes et al shows only a single multicast request is required to send the common payload data to the certain plurality of the receiving virtual queues, as disclosed in Col 3 line 66- Col 4 line10 and Col 15 line 54-58.

Regarding claim 17, Hughes et al shows the switching apparatus comprises a scheduler and a switching device, as disclosed in Col 7 lines 15- 21.

Regarding claim 18, Hughes et al shows for the multicast request, the common payload data is sent only once from the sending queue to the switching apparatus, as disclosed in Col 15 lines 39-44.

Regarding claim 19, Hughes et al shows more than half the time, a given multicast request is sent only once from the sending virtual queue to the switching apparatus, as disclosed in Col 4 lines 53- Col 5 line 17.

Regarding claim 20, Hughes et al shows the multicast request serves to send the common payload of data to N of the receiving virtual queues, where N is an integer, and wherein, on average, a given multicast request is sent substantially less than N times from the sending virtual queue to the switching apparatus, as disclosed in Col 15 line 39- Col 16 line 13.

Regarding claim 21, Hughes et al shows the grant includes a grant bitmap, as disclosed in Fig 5 Col 9 lines 43-47 and Col 6 lines 38-40 and Col 7 lines 15-25;

and wherein said sending of the common payload of data from the sending queue to the switching apparatus operates in accordance with the grant bitmap, as disclosed in Col 15 lines 39-44.

Regarding claim 22, Hughes et al shows a method for multicasting data held in a sending virtual queue through a switching apparatus to receiving virtual queues, said method comprising:

receiving a multicast request to the switching apparatus, the multicast request requesting to transfer a common payload of data from the sending virtual queue to a plurality of the receiving virtual queues, as disclosed in Col 3 line 66- Col 4 line 10 and Col 15 lines 39-41;

scheduling a grant of the multicast request to at least a certain plurality of the receiving virtual queues, as disclosed in Col 4 lines 21- 30;

saving the grant at the switching apparatus; and sending the grant from the switching apparatus to the sending virtual queue, Col 15 lines 27-38.

Regarding claim 23, Hughes et al shows a method further comprises:

receiving the common payload of data at the switching apparatus from the sending virtual queue, as disclosed in Col 15 lines 39-44;

configuring the switching apparatus in accordance with the saved

grant', and thereafter concurrently transmitting the common payload data from the switching apparatus to each of the certain plurality of the receiving virtual queues, as disclosed in element 607 in Fig 6 and Col 15 line59- Col 16 line18.

Regarding claim 24, Hughes et al shows a method that further comprises;

discarding (disclosed as processed in the reference) the saved grant following during or after said transmitting of the common payload data, as disclosed in Col 15 lines 27- 41.

Regarding claim 25, Hughes et al shows the saved grant comprises a grant bitmap as disclosed in Fig 5 Col 9 lines 43-47 and Col 6 lines 38-40 and Col 7 lines 15-25.

**Conclusion**

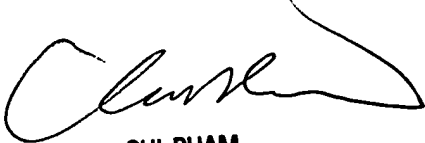
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher P Grey whose telephone number (571) 272-3160. The examiner can normally be reached on 6:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached at (571) 272- 3179. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christopher Grey  
Examiner  
Art Unit 2667

\*\*\*CPG  
9/14/04

  
CHI PHAM  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800 9/14/04